



Dart Aerospace Ltd.
1270 Aberdeen St
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3

D407-667-205TRN
Job Sheet 199413



Part No: D407-667-205TRN

Job Qty: 1 pcs

Part Name: Crosstube Turning Detail



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 8/22/19

Job Tracking No:

Due Date: 9/4/19

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: DWG REV G IPP Rev:A 08-03-06 new issue DD verified by:ec IPP Rev B 08.04.02 Removed polish EC verified by: DD IPP Rev:C 08-08-19 revE as per dwg DD verified by:EC

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
100	Mori Seiki TL-40 - 1	1 pcs		9/4/19	1.00	3.13	Mori Seiki TL-40 - 1		DAS 66 2019/10/12 9-89
110	QC 2	1 pcs		9/4/19	0.00	0.00	QC 2 - 1		
							QC 2 - 12		
							QC 2 - 14		
							QC 2 - 17		
							QC 2 - 19		
							QC 2 - 2		
							QC 2 - 20		
							QC 2 - 22		
							QC 2 - 23		
							QC 2 - 25		
							QC 2 - 32		
							QC 2 - 33		
							QC 2 - 35		
							QC 2 - 39		
							QC 2 - 4		
							QC 2 - 40		
							QC 2 - 44		
							QC 2 - 45		
							QC 2 - 48		
							QC 2 - 49		
							QC 2 - 50		
							QC 2 - 51		
							QC 2 - 52		
							QC 2 - 57		
							QC 2 - 62		
							QC 2 - 63		
							QC 2 - 8		DAS 66 2019/10/12 9-89
							QC 2 - 66		
							QC 2 - 64		

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					QC 2 - 65	
					QC 2 - 5	
					QC 2 - 71	
					QC 2 - 73	
					QC 2 - 69	
120	Mori Seiki TL-40 - 1 - B4B	1 pcs	9/4/19	1.00 3.13	Mori Seiki TL-40 - 1 - B4B	DAS 66 2019/10/17 9-89
130	QC 2	1 pcs	9/4/19	0.00 0.00	QC 2 - 1	
					QC 2 - 12	
					QC 2 - 14	
					QC 2 - 17	
					QC 2 - 19	
					QC 2 - 2	
					QC 2 - 20	
					QC 2 - 22	
					QC 2 - 23	
					QC 2 - 25	
					QC 2 - 32	
					QC 2 - 33	
					QC 2 - 35	
					QC 2 - 39	
					QC 2 - 4	
					QC 2 - 40	
					QC 2 - 44	
					QC 2 - 45	
					QC 2 - 48	
					QC 2 - 49	
					QC 2 - 50	
					QC 2 - 51	
					QC 2 - 52	
					QC 2 - 57	
					QC 2 - 62	
					QC 2 - 63	
					QC 2 - 8	DAS
					QC 2 - 66	66 2019/10/17
					QC 2 - 64	9-89
					QC 2 - 65	
					QC 2 - 5	
					QC 2 - 71	
					QC 2 - 73	
					QC 2 - 69	
140	QC 8	1 pcs	9/4/19	0.00 0.00	QC 8 - 12	
					QC 8 - 14	
					QC 8 - 17	
					QC 8 - 20	
					QC 8 - 25	
					QC 8 - 3	
					QC 8 - 32	
					QC 8 - 33	
					QC 8 - 35	
					QC 8 - 39	
					QC 8 - 4	
					QC 8 - 44	
					QC 8 - 45	
					QC 8 - 49	
					QC 8 - 58	
					QC 8 - 8	
					QC 8 - 9	
					QC 8 - 68	
						Plex 8/22/19 10:03 AM Dart.lajeunesse.marie

					QC 8 - 67	
					QC 8 - 1 (A)	DAS
					QC 8 - 47	47 19/10/17
					QC 8 - 40	9-89
					QC 8 - 52	
					QC 8 - 23	
					QC 8 - 57	
145 Crosstubes - 2 - B4B	1 pcs	9/4/19	0.00 0.65		Crosstubes - 1 - B4B	
					Crosstubes - 2 - B4B	
					Crosstubes - 3 - B4B	
					Crosstubes - 4 - B4B	
150 Handfinish - 1-1 Chemical-B4B	1 pcs	9/4/19	0.00 0.67		Handfinish - 1 - 1 - B4B	JL FEB 19-10-24
					Handfinish - 1 - 2 - B4B	
					Handfinish - 1 - 3 - B4B	
					Handfinish - 1 - 4 - B4B	
					Handfinish - 1 - 5 - B4B	
					Handfinish - 1 - 6 - B4B	
					Handfinish - 1 - 7 - B4B	
					Handfinish - 1 - 8 - B4B	
					Handfinish - 1 - 9 - B4B	
					Handfinish - 1 - 10 - B4B	
					Handfinish - 1 - 11 - B4B	
					Handfinish - 1 - 12 - B4B	
					Handfinish - 1 - 13 - B4B	
					Handfinish - 1 - 14 - B4B	
					Handfinish - 1 - 15 - B4B	
					Handfinish - 1 - 16 - B4B	
					Handfinish - 1 - 17 - B4B	
					Handfinish - 1 - 18 - B4B	
					Handfinish - 1 - 19 - B4B	
					Handfinish - 1 - 20 - B4B	
					Handfinish - 1 - 21 - B4B	
					Handfinish - 1 - 22 - B4B	
160 QC 7	1 pcs	9/4/19	0.00 0.00		QC 7 - 10	
					QC 7 - 13	
					QC 7 - 14	
					QC 7 - 15	
					QC 7 - 17	
					QC 7 - 18	
					QC 7 - 19	
					QC 7 - 2	
					QC 7 - 28	
					QC 7 - 3	
					QC 7 - 30	
					QC 7 - 34	
					QC 7 - 36	
					QC 7 - 37	
					QC 7 - 41	
					QC 7 - 47	
					QC 7 - 48	
					QC 7 - 51	
					QC 7 - 58	
					QC 7 - 59	
					QC 7 - 60	
					QC 7 - 9	
					QC 7 - 68	
					QC 7 - 50	2019-11-1
					QC 7 - 67	DAS
					QC 7 - 40	76
						9-89

170	Packaging 3-1 - Stock - B4B	1 pcs	9/4/19	0.00 0.00	QC 7 - 24	
					QC 7 - 43	
					QC 7 - 61	
					QC 7 - 81	
					Packaging 3 - 1 - B4B	
					Packaging 3 - 2 - B4B	
					Packaging 3 - 3 - B4B	
					Packaging 3 - 4 - B4B	
					Packaging 3 - 5 - B4B	
					Packaging 3 - 6 - B4B	
					Packaging 3 - 7 - B4B	
					Packaging 3 - 8 - B4B	
					Packaging 3 - 9 - B4B	
					Packaging 3 - 10 - B4B	
					Packaging 3 - 11 - B4B	
					Packaging 3 - 12 - B4B	
					Packaging 3 - 13 - B4B	
					Packaging 3 - 14 - B4B	
					Packaging 3 - 15 - B4B	
					Packaging 3 - 16 - B4B	
					Packaging 3 - 17 - B4B	
					Packaging 3 - 18 - B4B	
					Packaging 3 - 19 - B4B	
					Packaging 3 - 20 - B4B	
					Packaging 3 - 21 - B4B	
					Packaging 3 - 22 - B4B	
					Packaging 3 - 23 - B4B	
					Packaging 3 - 24 - B4B	3B 2019-11-1
					Packaging 3 - 25 - B4B	
					Packaging 3 - 26 - B4B	
					Packaging 3 - 27 - B4B	
					Packaging 3 - 28 - B4B	
					Packaging 3 - 29 - B4B	
					Packaging 3 - 30 - B4B	
					Packaging 3 - 31 - B4B	
					Packaging 3 - 32 - B4B	
					Packaging 3 - 33 - B4B	
					Packaging 3 - 34 - B4B	
					Packaging 3 - 35 - B4B	
					Packaging 3 - 36 - B4B	DAS
180	QC 21 - SA	1 pcs	9/4/19	0.00 0.00	QC 21 - SA - 21	21
					QC 21 - SA - 70	9-39
					QC 21 - SA - 53	NOV 01 2019

Part Op 100 - Mori Seiki CNC Lathe Large) 1-Fill tube with sand & install plugs DT8531 on both ends as per Folio FA248 3-Turn Descriptions: first side as per Folio FA248

110 - (QC2- Inspect parts off machine FAI/FAIB)

120 - (Mori Seiki CNC Lathe Large) 1-Turn second side as per Folio FA248 4-Scribe part # and batch # using vibrating stylus as per Dwg D407-667-245

130 - (QC2- Inspect parts off machine FAI/FAIB)

140 - (QC8- Inspect parts - second check)

145 - (Crosstubes) Grind off circumferential machining marks longitudinally.

150 - 1- handfinish X-TUBE INSIDE AND OUT 2- ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE

160 - (QC7-Inspect Chemical Conversion Coat)

170 - Identify and stock in kanban rack

180 - (QC21- Final Inspection - Work Order Release)

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6011-115	Crosstube Material	1 pcs (1 ea)	100-Mori Seiki TL-40 - 1	F139420

Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
100-Mori Seiki TL-40 - 1	D6011-115	1	48	0
Part Specifications				
Specifications could not be found.				

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Container No: S222076



Part: D407-667-205TRN

Job No: 199413

Serial No/Batch: S222076

Revision: G

Inspector:

Exp Date:

Instructions:

Dart Aerospace Ltd.
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CANADA
TEL.: 1 813 832-5200
Email: sales@dartaero.com
www.dartaerospace.com

Date: 10/11/19

③

DART AEROSPACE LTD		Work Order:	195413
Description: Crosstube Assembly		Part Number:	D407-667-245
Inspection Dwg: D407-667-245 Rev: G		Page 1 of 2	

FIRST ARTICLE INSPECTION CHECKLIST

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.490	+0.005/-0.000	2.494	✓		CNC-04	
	1.832	+0.005/-0.000	1.837	✓		CNC-08	
	1.838	+0.005/-0.000	1.843	✓		↓	
	1.892	+0.005/-0.000	1.897	✓		↓	
	2.052	+0.005/-0.000	2.057	✓		CNC-04	
	2.206	+0.005/-0.000	2.211	✓		↓	
	2.521	+0.005/-0.000	2.526	✓		↓	
	2.633	+0.005/-0.000	2.638	✓		↓	
	4.10	+/-0.030	4.10	✓		CNC-08	
	4.978	+/-0.030	4.978	✓		"	
	2.040	+0.000/-0.010	2.039	✓		CNC-08	
	0.125	+/-0.010	.127	✓		"	
	R0.063	+/-0.010	.063	✓		AG	
	R0.500	+/-0.010	.500	✓		"	
SIDE B	2.490	+0.005/-0.000	2.493	✓		CNC-04	
	1.832	+0.005/-0.000	1.837	✓		CNC-08	
	1.838	+0.005/-0.000	1.843	✓		↓	
	1.892	+0.005/-0.000	1.897	✓		↓	
	2.052	+0.005/-0.000	2.058	✓		CNC-04	
	2.206	+0.005/-0.000	2.211	✓		↓	
	2.521	+0.005/-0.000	2.526	✓		↓	
	2.633	+0.005/-0.000	2.638	✓		↓	
	4.10	+/-0.030	4.10	✓		CNC-08	
	4.978	+/-0.030	4.976	✓		"	
	2.040	+0.000/-0.010	2.034	✓		CNC-08	
	0.125	+/-0.010	.130	✓		"	
	R0.063	+/-0.010	.063	✓		AG	
	R0.500	+/-0.010	.500	✓		"	
	112.91	+/-0.020	112.930	✓		Tape	

Item	QTY -245	PART NUMBER	DESCRIPTION
	X	D407-867-246	CROSSTUBE ASSEMBLY (407 HIGH AFT)
1	1	D6011-115	CROSSTUBE
2	2	D2873-043	NUT PLATE
3	2	D2873-045	NUT PLATE
4	1	D2894-1	SUPPORT
5	2	D3180-1	CHAFING SHIELD
6	2	D3595-063-430	RUBBER CUSHION
7	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
8	4	MS21820-22	CLAMP
9	2	MS21820-25	CLAMP (OR MS21820-24)
10	AR	SCOTCH-WELD DP480	EPoxy ADHESIVE, 3M SCOTCH-WELD
11	AR	PROSEAL 880	SEALANT

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D8011-115
FINISHED LENGTH = 112.9130.020
- 2) FINISH:
CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT CROSSTUBE PER DART QSI 005 4.2
FOR HATCHED AREAS (ZN A6-2), MASK AS REQUIRED
TO APPLY PRIME AND APPLY CLEAR COAT ONLY
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D407-867-245" AND BATCH NUMBER ON INSIDE OF CURF USING VIBRATING STYLUS.
- 7) WEIGHT: 27.7 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION TUBE FLATTENING DUE TO BENDING IS 8% BASED ON O.D.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 11) INSTALL D2894-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP480 PER QSI 016. LET CURE FOR 24 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 12) INSTALL MS21820-25 CLAMPS WITH D3595-063-430 RUBBER CUSHIONS TO SECURE D2894-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
- NOTE: MS21820-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.6 T-READS IN SAFETY ON THE NUTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDABLE LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) APPLY A THIN COAT OF PROSEAL 880 ON INSIDE CONCAVE SURFACE OF D3180-1 CHAFING SHIELDS AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEAL 880 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.
- 16) INSTALL D3180-1 CHAFING SHIELDS SO THAT OVERLAP IS 60 TO 70 DEGREES FROM BOTTOM OF CROSSTUBE OPPOSITE D2894-1 SUPPORT.
- 17) TORQUE CLAMPS 80 TO 100 IN-LB. TORQUE CLAMPS ON D3180-1 CHAFING SHIELD 40 TO 50 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURED FOR 24 HOURS.

SHOP COPY
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UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 109413 NLS
19-08-22

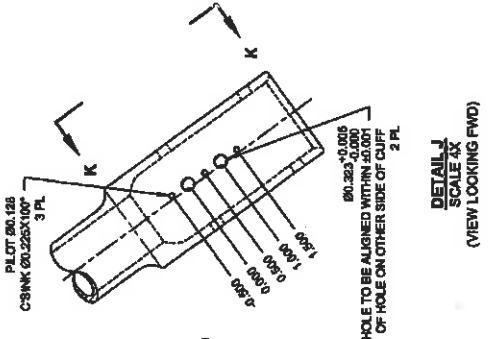
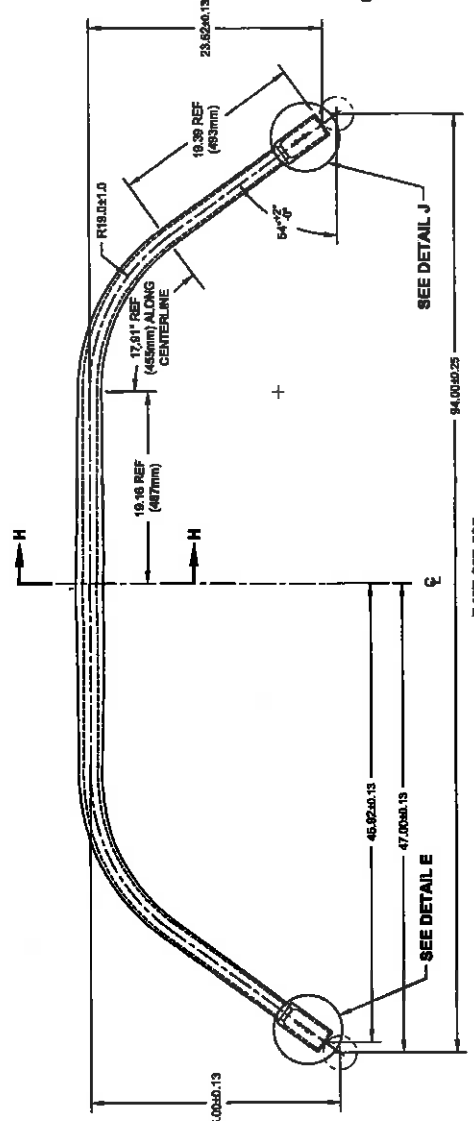
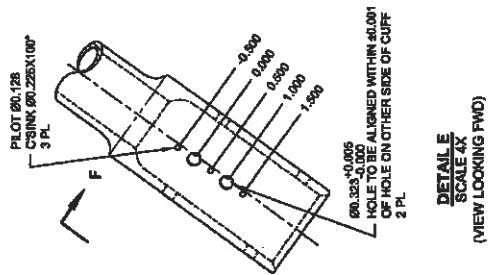
G	INCORP. DEC'S D407-867-245-F1-F2 (ZN D8-1, A6-1, D5-2, B6-2, C6-2); 8.90 WAS 8.83 (ZN D6-2); TORQUE REDUCED FOR CHAFING SHIELD (ZN A6-1); FINISH REVISED TO ALLOW MANUFAC. FLEXIBILITY (ZN C6-1)	RF	16.03.20
F	REFORMAT NOTES TO NEW STANDARDS (ZN B6-1); RELOCATED FLAG # 6 (ZN A6-3) PER NCR 210; REMOVED REF. & ADD TOLERANCES (ZN C6-3, C4-3 & D2-3)	RF	06.11.08
E	8.02 AND 8.63 WERE 8.40 AND 8.90 (ZN D6-2); REORGANIZED VIEWS AND REFORMATED DRAWING TO CURRENT STANDARDS. REASONS: CLAMPS MOVED 0.375 TOWARD CL TO ELIMINATE INTERFERENCE WITH AIRCRAFT MOUNTS. REFERENCE: PAR908-21 AND ECN#1225	MB	06.07.24
D	ADD VIEW FOR OEM SKID HOLES. ROTATE ORIENTATION OF CLAMPS SECTION 5.5. REMOVE -661 ABRASION STRIP. ADD MAGNOROND 6368, ADD CUSHION	PH	07.02.07
C	ADD HOLES AND NUT PLATES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES	PH	05.07.28
B	ADD CHAFING SHIELD	CP	03.05.21
A	NEW ISSUE	CP	02.06.13
REV.	DESCRIPTION	BY	DATE
DESIGN	RF		
DRAWN	RF		
CHECKED	RF		
MFG. APPL.	D407-867-245		REV. G
APPROVED	TITLE		SHEET 1 OF 4
DE APPL.	CROSSTUBE ASSY (407 HIGH AFT)		SCALE
DATE	15.03.20		HTS

RELEASED

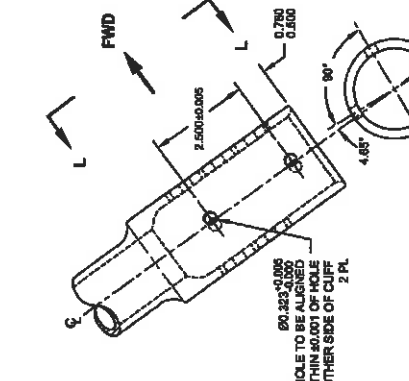
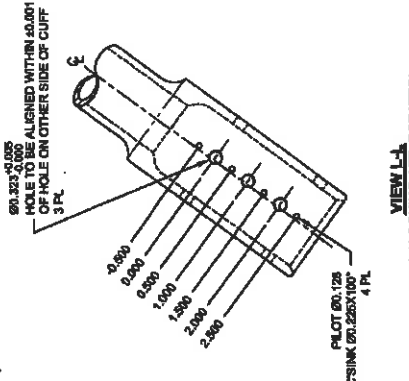
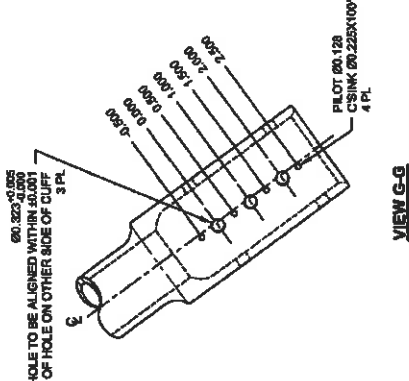
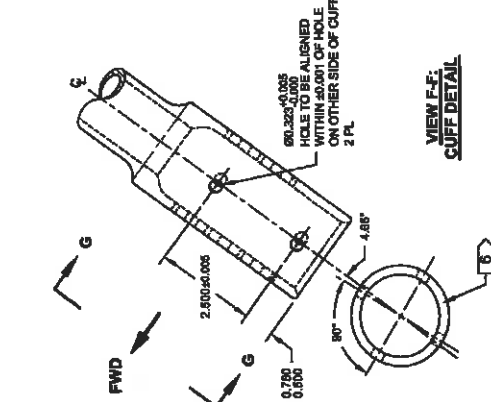
2015 APR 09
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HAWKESBURY, ONTARIO, CANADA

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D407-567-205
BENDING AND DRILLING DETAIL
(VIEW LOOKING FWD)



VIEW F-F:
CUFF DETAIL

VIEW G-G
(VIEW LOOKING AFT, ROTATED)

VIEW L-L
(VIEW LOOKING AFT, ROTATED)

VIEW K-K:
CUFF DETAIL

VIEW J-J:
CUFF DETAIL

VIEW I-I:
CUFF DETAIL

RELEASED
2015 APR 09

DESIGN	REV. G
DRAWN	DRAWING NO.
CHECKED	D407-567-245
INFG. APPR.	TITLE
APPROVED	CROSSTUBE ASSY (407 HIGH AFT)
DE APPR.	SCALE
DATE	15.03.20
	NTS

DART AEROSPACE LTD
HAMMERSLEY, ONTARIO, CANADA

CROSSTUBE ASSY (407 HIGH AFT)

DATE 15.03.20

SCALE NTS

REV. G

SHEET 3 OF 4

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DATE 15.03.20

SCALE NTS

REV. G

SHEET 3 OF 4

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Job: _____ Part No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐		DEPARTMENT/PROCESS Skid-tube ☐ Cross tube ☐ Eng. (Non-AW) ☐ Machining ☐ Small Fab ☐ Prod. Eng. Coord. ☐ Large Fab ☐ Finishing ☐ Rec/Store/Packaging ☐				Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QS1042)							
Description Work Order Deviation		Disposition									
		Completed By									
		Lead hand / Supervisor									
		QC / QA Coordinator									
Root Cause		FAULT CATEGORY									
☐ Operator		☐ Pressure/Forced		☐ Contamination		☐ Power Loss/Surge		☐ Positioned Wrong			
☐ Manufacturing Process		☐ Bending		☐ Misaligned/off center		☐ Folio/Program		☐ Outside Tolerance			
☐ Equip/Tooling		☐ Crushing		☐ BOM/Route		☐ Grain Direction		☐ Drawing			
☐ Handling/Preservation		☐ Cracks		☐ Broken/Damage/Defect		☐ Weld		☐ Finish			
☐ Material		☐ Crimp/Kink/Ripple/Wave/Twist		☐ Incomplete/Unclear Instructions		☐ Wrong Stock Pulled		☐ Part Lost/Missing			
☐ Product Improvement		☐ Marks/Chatter		☐ Drill Holes		☐ Out of Sequence		☐ Misread			
☐ Process Improvement		☐ Mislabeled		☐ Fit/Function		☐ Off-set/Set-up					
☐ Human Factors		Other/Details:									